With Mr Hugh Lane's compliments.

DIFFERENTIATION

IN

RHEUMATIC DISEASES

(SO CALLED)

READ BEFORE THE

BRISTOL MEDICO-CHIRURGICAL ASSOCIATION

14TH MAY, 1890

[*Reprinted from* THE LANCET, *October*, 1890]

BY

HUGH LANE, L.R.C.P., ETC.

Hon. Medical Officer to the Royal United Hospital, Bath

Hon. Physician to the Eastern Dispensary, Bath

LONDON

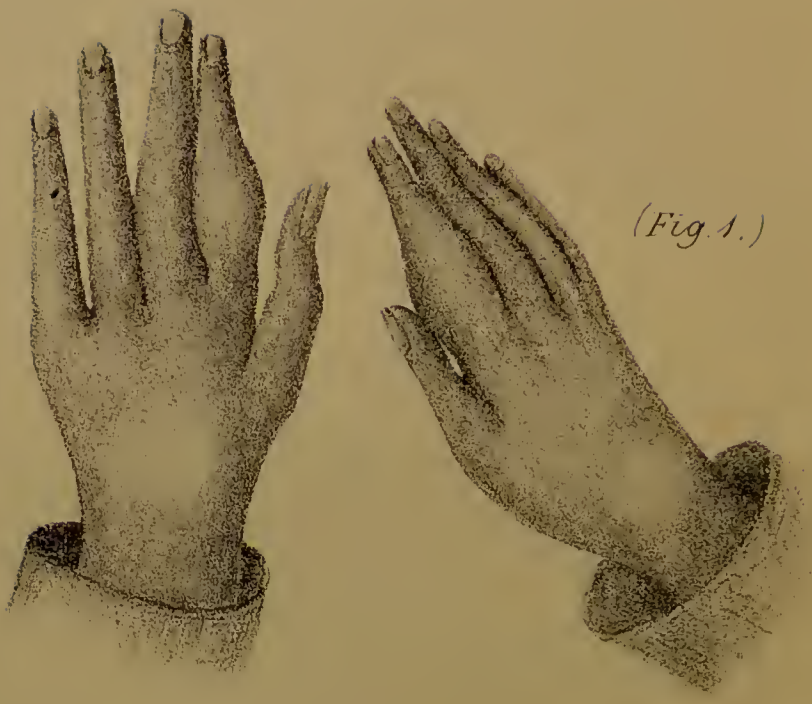
J. & A. CHURCHILL

11, NEW BURLINGTON STREET

1890

1s. 6d.

PLATE I.



(Fig. 1.)

(Fig. 2.)

PLATE I.

Chronic Rheumatoid Arthritis.

Fig. 1.

Matilda H., aged twenty-four, admitted February 20th, 1889. First noticed pain and swelling in right wrist. No marked increase until October, 1888, then pains in finger-joints; then commenced swelling, as shown in Plate, in fifth metacarpo-phalangeal joint of left hand, the proximal phalangeal articulation of right hand, and swelling over carpus in same hand.

Chronic Rheumatic Arthritis.

Fig. 2.

The left hand of Rosa C., aged thirty-three, in which a good example of chronic rheumatic arthritis is shown by the well-defined swellings over the phalangeal articulations. Deformity and emaciation are also well marked.

This patient was quite well until she had acute rheumatism two-and-a-half years ago. Since then the progress of the disease has been as shown.

[*To face Title-page.*

DIFFERENTIATION

IN

RHEUMATIC DISEASES

(SO CALLED)

READ BEFORE THE

BRISTOL MEDICO-CHIRURGICAL ASSOCIATION

14TH MAY, 1890

[*Reprinted from* THE LANCET, *October*, 1890]

BY

HUGH LANE, L.R.C.P., ETC.

Hon. Medical Officer to the Royal United Hospital, Bath

Hon. Physician to the Eastern Dispensary, Bath

LONDON

J. & A. CHURCHILL

11, NEW BURLINGTON STREET

1890

DIFFERENTIATION

IN

RHEUMATIC DISEASES

(SO CALLED).

"*Non est vivere, sed valere, vita.*"

It may be regarded as a truism to say that as the empire of medical science gradually widens its bounds—some of its departments which have in the past attracted but too scant a measure of serious notice are only now beginning to receive the attention which is their due, and as in every department of human knowledge the synthetic method precedes the analytic, it is only when we pass from the stage of dealing in broad and general definitions, and arrive at that of differentiating and classifying that we can truly say that a subject of this kind has begun to be properly grasped; and in the case of chronic rheumatic diseases so-called, the time is

not so very far distant when the employment of the single term rheumatism was held sufficient, not only as a definition, but as an explanation of numerous other diseases, which it is now found cannot be either diagnosed or cured by the device of merely comprising them under one common term and treating them all alike.

It has, therefore, to be kept in view in approaching the special study of rheumatism, that before grappling with it in its numerous and distressing forms, these must be scientifically detailed and classified by the same methods by which all scientific knowledge is reached, viz., inductive reasoning based upon extensive and minute observations.

Time was, when to the old, the poor, and the overwrought—rheumatism seemed to be the natural and expected conclusion to a life of trouble, only capable of being mitigated by the warm clothing which charity might supply or proximity to a friendly fire-side. It was not provided for nor guarded against, until its presence made itself felt, for it was looked upon as "Kismet," a thing that could not be avoided, and the idea of preventing its approach, of looking for constitutional symptoms, or, in fact,

attempting anything beyond the mere alleviation of its pain—when once the victim was in its grip—was a thing unheard of. It did not then seem to be realised, that when a patient complained of pains, swollen joints and other kindred deformities, that to say "this is rheumatism," and to prescribe some stereotyped treatment applicable to rheumatism so-called, was not to exhaust the subject, nor even to lead the way to the ultimate hope of eradicating the source and origin of the evil. But now that we are beginning to understand the true nature, indications, and treatment of its various forms, and when the conviction is forced upon us that it is because of these that so many of the population around us are racked and torn with pains and deformed beyond the semblance of humanity, now we also begin to see the burden that lies upon us to relieve these victims, to make life more tolerable for them and better worth living, in fine to demonstrate to them that something is possible for them beyond mere physical existence, encumbered with pains and discomforts, and to teach them the truth and the meaning of that pregnant aphorism of antiquity —"non est vivere, sed valere, vita."

It will not, I trust, be looked upon as mere extravagance to say that by the increase of careful unremitting investigation into the various kinds of rheumatic diseases, especially with regard to their early and curable stages and the marks by which they may then be recognised, a better and higher result will inevitably be reached, viz., that in good time such symptoms and such effects will no longer be visible, and we shall no longer have amongst us the crippled frames of which I have spoken, and the lives of misery which are so often transmitted to an enfeebled posterity. This consummation so devoutly to be wished is, I fervently believe, no mere visionary's dream of the future, but is an actuality almost at hand. It is with such a result in view, and with the hope that our present proceedings may in some small degree contribute to it, that I am to address you on the subject of rheumatic diseases to-night.

The object is to endeavour to throw some further light upon the doubts which exist as to what the differences are between the varieties of rheumatic disease so-called. By these we mean the diseases to which the terms chronic rheuma-

PLATE II.

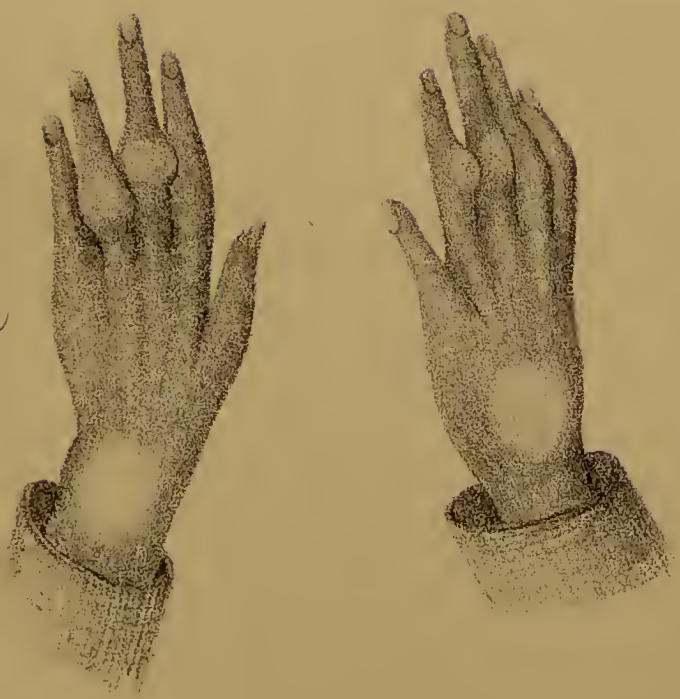
A Mixed Case of Rheumatoid and Rheumatic Arthritis.

Fig. 6.

Left and right hands of Charlotte M., aged twenty-four. Twelve months before an attack of acute rheumatism noticed pains in joints, with progressive emaciation and sweating of the limbs. There was no swelling of the joints until after the acute attack, then the joints presented the appearance shown, viz., swelling less definable than in rheumatic arthritis in second and third proximal phalangeal joints of left hand, same joints in first and second of right hand, and swelling over carpus in both hands.

[*To face p.* 6.

PLATE II.



(Fig. 6.)

tism, rheumatoid arthritis, rheumatic arthritis, and what is more popularly known as rheumatic gout are applied.

A few months ago a work on this subject appeared by myself in conjunction with Mr. Charles T. Griffiths, in which were set forth opinions based upon our experiences and upon the careful analysis of upwards of 3,000 cases, and which were almost purely clinical observations. We feel that it is eminently an important subject, in this country at least, that the persistency of investigation should be courted, for go to what part of the kingdom we will we find one or other of the above mentioned diseases to be in large proportion, as compared with almost any other in the whole practice of medicine. Although we cannot hope to better, to any considerable extent, those advanced in life who are suffering from a rheumatic affection, in spite of our utmost wishes and endeavours to do so, the subject which, we think, ought to hold a greater prominence than it does, is that of giving attention to the early interference in the same disease, or in one of them related to it, whether it be in a patient a little younger or much younger. For our experience has been that we have found

that the tendency for the rheumatoidal element to develop in young persons is terribly on the increase.

Now, the result of our exertions has been to convince us of the following, that the difference between rheumatism and rheumatoid arthritis is of a greater and more extensive character than the text-books would have us believe, and so markedly have clinical facts impressed this truth upon us, that we gladly grasp any occasion or opportunity when we can explain the results of our research.

Fortunately for the success of our cause, our paths have led us into regions where rheumatism, rheumatoid arthritis, and rheumatic arthritis are grouped together for special treatment.

In the Royal Mineral Water Hospital at Bath can be seen any day these diseases in all their phases, and with all their distinguishing differences at any age and in every stage.

It must strike as being suggestive that we should have mentioned rheumatoid arthritis and rheumatic arthritis separately; the reason for so doing will presently be made evident. But first of all let us look at rheumatism as compared with rheumatoid arthritis. This condition of chronic

rheumatism is usually regarded as a most frequent one, but experience has shown that many of these cases of chronic rheumatism, so-called, if inquired into more deeply, will prove to be one or other of the supposed allied diseases to be described later. When the sciatic nerve is attacked by rheumatism we call it sciatica, when the lumbar muscles—lumbago, when certain nerves we employ the term neuralgia, and yet all, in spite of their change of name, claim a share in their relation to chronic rheumatism. We do not mean to offer any obstacle to this arrangement; it is, in fact, by adopting this quasi-complication we carry simplification. But when the term chronic rheumatism is used it seems to us that it could not be utilised for better and clearer designation than in those cases—in which the joints are painful but not swollen, or in which there is a neuralgia, or even arthralgia associated with myalgia, or apart from it, or in which the various fasciæ are affected, or in which there is a general neuralgic condition supervening on an attack of acute rheumatism. This is what we prefer to call chronic rheumatism.

But in speaking of the symptoms of rheumatoid arthritis we will make reference to those

symptoms which are sometimes put down as common to both.

Let us imagine two patients sitting side by side, one with chronic rheumatism and the other with rheumatoid arthritis. Now what do we see: in the rheumatoid arthritis case the first thing that strikes us is most probably the pallor of the patient, as compared with the chronic rheumatic. We look a little closer and the next thing we perceive will most probably be the joints. The patient with chronic rheumatism will present in this feature little or nothing; whereas, on the other hand, the rheumatoid arthritis patient will be more or less crippled. There will be distinct muscular atrophy in the rheumatoid arthritis case, and the complexion will present the pallor mentioned before, on closer inspection showing yellowish tinges on the face, neck, and perhaps elsewhere. Now, if we ask both patients if they ever have had rheumatic fever they both will probably say no. But further inquiry will elicit the probable fact that the family history of the patient with rheumatism will be a good one, or perhaps at the most a rheumatic one, while the rheumatoid arthritis patient in most cases gives or shows a strumous taint. It is upon the basis

of this strumous taint that we feel we must look for further assistance to guide us in the treatment of this terribly crippling malady. It is nearly always present more or less.

We are aware that this strumous history has not been particularly referred to in other descriptions of the disease; it being the almost invariable accompaniment has induced us to bring the matter forward, in fact to look upon struma and rheumatoid arthritis as a cause and effect—has seemed to us the one and plain characteristic in our investigations. Time does not allow of departing far afield for instances in support of the truth of this. The facts, as we have stated, have been so palpable and the distinctions at once so clear that perhaps it is wholly unnecessary. We would, however, make one exception and give one circumstance in support of the theory: take, for instance, the disease known as Charcot's disease. We see the condition which prevails in the joints, and on further inquiry we find a tabetic history. It is not for us to assert that the tabes and joint disease are cause and effect; although when we find a patient with a personal and family history of scrofula, struma, or tabes suffering from an

affection of the joints, in which no pre-existing attack of rheumatism can be proved, are we very wrong in believing there is such a thing as cause and effect in the case we have before us?

Now, why have we mentioned rheumatoid arthritis and rheumatic arthritis as two distinct diseases? For the following reasons:—Rheumatic arthritis is, we consider, an arthritis produced by rheumatism—be the attack acute or subacute. It may be asked now—Then what is chronic rheumatism of a joint when it supervenes on an acute attack? Is it rheumatic arthritis? In the strictest sense of the term it is. But what concerns us is not so much the difference between chronic rheumatism supervening on an acute attack with little joint affection, and chronic rheumatic arthritis supervening upon an acute attack of rheumatism with considerable joint implication, so much as the differences between chronic rheumatic arthritis and chronic rheumatoid arthritis.

We assert at once that the main difference is in the cause, and we shall also at once say that the main differences do not stop short at the cause.

In these rheumatic cases we shall find that the characters—that the physical characters—

PLATE III.

RHEUMATOID ARTHRITIS, SHOWING ULNAR TENDENCY.

Fig. 7.

Right and left hands of Ann S., aged fifty-two. She first noticed pains in wrists when wringing clothes; has never had acute rheumatism. Well-marked rheumatoidal changes seen in metacarpo-phalangeal articulations (first and second) of right hand, and in ring finger proximal articulation in left hand.

SHOWING TYPICAL CONTRACTIONS IN RHEUMATIC ARTHRITIS.

Fig. 8.

Right and left hands of Margaret M., aged thirty-seven; acute rheumatism twice. When seventeen years of age fingers at once assumed flexed and ankylosed condition, as depicted. This may be well regarded as an advanced condition of rheumatic arthritis, although the swelling and deformity appeared much about the same time.

[*To face p.* 12.

PLATE III.

(Fig. 7.)

(Fig. 8.)

of the joints implicated present a very considerable difference. There is frequently a flexion and fixation in the phalangeal joints, accompanied by a swelling which ends abruptly above and below each joint, whether in those fixed or not, which is not observable in rheumatoid arthritis; for in rheumatoid arthritis the swellings have strong inclinations to be spindle-shaped—that is, graduating into the normal parts. It seems a singular fact that the proximal phalangeal joints of the second fingers are the favourite ones attacked in rheumatoid arthritis, and if a monarthritis still more so is it the case. In rheumatic arthritis we have found a monarthritis more the exception than the rule.

Again, in rheumatic arthritis, the swellings, although positive enough in themselves, can be characterised by many negative signs; for instance, there is not the thickening of the capsule to the same extent as in rheumatoid arthritis, and then there is no effusion: the swelling seems to be due to the intra-articular cartilages and capsules combined. When emaciation occurs, as it so frequently does in these cases, the condition of joint deformity is well seen. Taking, for example,

the metacarpo-phalangeal articulations, which are so frequently affected, so much disorganisation of joint structure takes place that distinct dislocation of the heads of the phalanges is noticed, causing the heads of the metacarpal bones to stand out, exposing about two-thirds of their articular surfaces: this seems to be the condition when disorganisation of tissue has taken place; but when disease has occurred, and an attempt at organisation has gone on, adhesions have formed and the joints are apparently ankylosed. In these cases the swellings are still less marked, it being quite common to observe no departure from the natural size, and yet perhaps the joints moulded together producing an actual condition of synostosis.

What diagnosis are we to put upon the results of acute rheumatism coming on in a patient already suffering from a previous arthritis, which has had its origin in a more or less obscure manner? That must depend on the ultimate clinical appearances prevailing. An important consideration here presents itself. Assuming that the patient in this recent attack of acute rheumatism develops cardiac mischief, will not the effect on the progress of the result-

ing disease be regulated in proportion as the cardiac lesion is severe or mild? First of all, the action of a heart more or less rendered arhythmical by endocarditis, or myocarditis, upon a case of rheumatoid arthritis. The most important thing is perhaps the fact that tissues, especially muscular ones, already impoverished by the causes of rheumatoid arthritis, now lose another of their sources of nutrition by obstructed blood supply—possibly there may be pulmonary congestion, or regurgitation with malæration. That these complications in any way produce a separate and distinct pathological condition as a result of combined forces is not evident.

Among the leading characteristic constitutional symptoms of rheumatoid arthritis may be enumerated the following: General weakness, anæmia, emaciation, loss of appetite arthralgia, lassitude, and the various typical neuroses, which we have minutely described elsewhere.

We do not deny that these distinctions are sometimes so ill-defined as to forbid us deciding upon an arbitrary classification—especially where we find a case of acute rheumatism occurring in

a case of rheumatoid arthritis, or in which it has previously occurred. Here we often see the leading features of both rheumatic and rheumatoid arthritis displayed in the same individual, and yet, so satisfied are we with the proof, that in these cases we hold the patient may be suffering from both diseases distinctively; this we unhesitatingly call a "mixed case."

The conclusions that we think must be drawn from the clinical practice which has led to the publication of a book by ourselves,* in which are set forth these differences in a much more exhaustive manner, as well as from this paper, must be stated at the outset to be that rheumatism and rheumatic arthritis are about as distinct from rheumatoid arthritis as they can possibly be. It may not be out of place to refer to the term rheumatic gout, which seems to be the favourite term in some of these conditions. Could any term be more misleading when it is intended to convey the idea of a single affection? It at once suggests a combination of two

* "The Rheumatic Diseases So-called," by Hugh Lane and Charles T. Griffiths. London: J. & A. Churchill.

separate diseases—rheumatism on the one hand, gout on the other; and yet over and over again we find a patient afflicted at any period of life, in which there has been neither the slightest history of rheumatism nor the history of gout, but yet there is no hesitation shown in at once determining the case as one of rheumatic gout. It may be excusable for a patient, especially one having no connection with the profession, to use such a term, but for the reasons just stated, does it not seem to be an extravagant departure from the plain facts of medical nomenclature?

It has been our rule to speak of osteo-arthritis, not as a synonym for rheumatoid arthritis, but as an advanced condition of the latter, when bony implication has been distinct enough to merit the use of the Greek word osteo. By bony implication we mean eburnation, osteophytic outgrowths, enlargement, flattening, in short the later stages after the elastic swelling of the soft structures has manifested itself.* It may be satisfactory for us

* The pathology of these diseases was most carefully and skilfully investigated in an article in the "Pathological Society's Transactions" of 1886, by my brother, Mr. W. Arbuthnot Lane, M.S., F.R.C.S.

or anyone to be able to grasp the precise condition, clinical or pathological, or both, of the cases which present the appearances we have described; but when it comes to be a question of treatment we must confess that the success has been proportionate to that which is obtained in the treatment of struma or phthisis, a fact which may go some way to further the theory advanced by us, of the association between these diseases and rheumatoid arthritis. In point of fact, the treatment which is adopted for the former we have found to be the most serviceable for the latter. Tonics, such as cod-liver oil, which, given in association with such medication as iron, arsenic, tincture of iodine, or the iodides of sodium, phosphate of lime, seem to have a totally different but increased beneficial action.

It must be confessed here that all the cases under treatment have been those which have been undergoing a course of the mineral waters of Bath, therefore due consideration must be given to this fact. So long as patients have not advanced to the condition of osteo-arthritis, the aforesaid treatment seems to be—in so far as medicines are concerned—the best at our disposal. It may be superfluous to add that

PLATE IV.

This Plate illustrates the Deformities of a "Mixed Case" of Rheumatoid and Rheumatic Arthritis.

The hands of Alfred P., 4, Allen's Ward. Twelve years previously patient developed rhenmatoid arthritis in several joints in each hand. This went on without much change for two years, when he got an attack of acute rheumatism, after which the joints gradually assumed the appearance shown.

[*To face p.* 18.

PLATE IV.

proper clothing, for example, flannel or woollen clothing, and an equable temperature, etc., etc., should not be forgotten.

As regards the local treatment, the occasional adoption of the frequent but gentle application of massage all tends to act by stimulating locally the circulation, and must benefit by improving the vitiated vitality of the joint structures.

When inflammatory adhesions have formed, the question of passive movement has, we have found, been better answered by somewhat more forcible means than have hitherto been laid down, viz., that of forcible flexion and extension; and where the adhesions have been so firm as to produce the condition known as fibrous ankylosis, we have found the same treatment equally satisfactory. Cases have passed through our hands which have presented themselves to us with knees flexed, bringing the legs nearly to right angles with the thighs, which under chloroform have been forcibly extended, treated in the orthodox way by ice-bag and splint for the course of a few days, which have put the patient into a position in which he or she has been able to exercise his or her locomotive powers, instead of passing day after

day and week after week a miserable bedridden cripple.

We are quite aware there is nothing new in any of these modes of procedure, and yet at the same time the histories which patients have given of their states before coming under observation lead us to think that many of the methods enumerated have at least not been given a trial. Disappointments have been many it is true, and often have we found that what appeared to be of singular beneficial effect in one patient, in what appeared to be a parallel case if the same treatment has been pursued, no impression whatever has been made upon the progress of the case.

In treatment of hip affections in this disease, particular attention might be given to what we have found of marked benefit, and that is the treatment by counter-irritation. A blister applied behind the great trochanter has often produced marked benefit,—so marked a benefit as to induce the patient to clamour for a repetition of the application.

The foregoing remarks apply essentially to the rheumatoid affections.

The treatment of rheumatic arthritis must be

carried on in proportion as the amount of rheumatism is or has been present. Anti-rheumatic medication is too well known to justify our repetition of it here. The contractions which are more frequent in rheumatic arthritis, and especially where the phalangeal joints are concerned, can be treated much upon the same lines by local interference, as they are in rheumatoid arthritis. If a mixed case a mixed treatment would be indicated; in short, that element which prevails must be combated by that particular style of treatment which we have shown to be the most beneficial.

How the mineral waters of Bath improve the tone of the patient hæmatinically, and how they neutralise any stored-up deleterious matter—how the tissues are washed thoroughly by an alkaline bath, how, by the internal use of Bath water the blood is washed and its alkalinity maintained, and how medicine (iodine, strychnine, especially arsenic in conjunction with these) and cod-liver oil, given with iron and iodides of sodium in gradually increasing doses, are quite a sheet-anchor in rheumatoid and rheumatic emaciated patients, and which seem to exert almost specific influence in these diseases,

are facts which are happily becoming well known.

But how the fact that patients do not repair to Bath in the early stages of the disease and how unfairly many of them, even when they do come, treat themselves, and the Bath waters too, by availing themselves of just sufficient baths to make them acquainted with the mode of bathing—are facts which are as regretable as they are true; and especially when they draw the conclusion that they will derive just as much good by having their own warm baths at home, because they have not stayed long enough to see for themselves the good which would almost without fail show itself in appropriate cases: which can be summed up by saying that they should repair to Bath in the very early stages of the disease.

The after results in all cases will be decided to no inconsiderable extent by the mode of life which the patient pursues; and, unfortunately, in so many of the cases from which we have derived so much valuable and interesting information, satisfactorily as they may have been turned out of hospital at one time—have appeared some months later suffering from an

aggravation of the symptoms—often so clear as to show that only over-fatigue, and often that there has been a forced disregard, or a self-imposed disregard of rule—but at the same time it must be allowed them, a bounden obligation has obliged them to pursue avocations so unconducive to a more satisfactory end.

All will allow that this is not a fatal disease, and all must admit that the facilities for gaining information of pathological importance are difficult; but if clinical material is plentiful and if facilities for treatment are at hand, it must also be admitted that we have at least gained two-thirds of the battle.

Perhaps the greatest lesson to be learnt from these troublesome complaints—especially rheumatoid arthritis—is to be suspicious and take it in time, by adopting what we have elsewhere attempted to show is the most desired means—for early interference will often thwart its progress and its accompanying ravages.

In conclusion, gentlemen, let us sum up what we believe to be the result of the preceding observations.

We have to the best of our ability endea-

voured to show (1) What are the nature and characteristics of the diseases which we are combating and the marks by which they can be recognised; (2) the methods of treatment by which their ravages are to be met and relieved, or neutralised. We have not attempted to dogmatise upon the subject, we have merely set before you the fruits of laborious, and, we trust, we may venture to say to some extent original investigation. In this paper we have not sought to claim any merit for whatever we may have attempted to contribute to the fuller discussion of the subject, for we cannot forget that all contributions made towards medical science and every fresh ray of light cast upon it are, in the phrase of one of our greatest philosophers, but the picking up of pebbles by the shore of the ocean.

If we should succeed in warding off or postponing indefinitely the serious results which we all know too well, we should indeed have accomplished a humane feat; if we have not, we can take to ourselves the satisfaction, that we have done our best in trying.

PLATE V.

Rheumatoid Arthritis and Gouty Deposit on same Hand.

Fig. 9.

W. H., aged forty-five, carpenter. Father died of gout: mother, no rheumatism or gout. Two brothers: one suffers from rheumatoid arthritis. One sister: healthy. Twenty years ago got rheumatoid arthritis in left foot. Now parts affected as seen in Plate, in phalangeal joints of fingers. Right index finger, where alone the deposit of urate of soda was observed.

Chronic Gout.

Fig. 10.

T. B., aged fifty-five, coachman. Father died of old age: mother also died of old age. No brothers or sisters affected with gout or rheumatism.

[*To face p.* 24.

PLATE V

Fig. 10.

Fig. 9.

HANHART IMP

RHEUMATOID ARTHRITIS.	RHEUMATIC ARTHRITIS.
1. Nervous disease due to debilitating causes.	1. Following rheumatism always.
2. Its last stage is osteo-arthritis.	2. Has no connection with osteo-arthritis.
3. Symptoms constitutional as well as local.	3. More confined to joints.
4. Joints most used are the first affected, smaller joints first, running centripetally. Temporo-maxillary joints often affected. Symmetry of joints affected more noticeable.	4. Large joints often first affected, running centrifugally, and chiefly joints affected that were attacked in previous acute rheumatism. Temporo-maxillary joints never affected. Not so often symmetrical.

RHEUMATOID ARTHRITIS (*continued*).	RHEUMATIC ARTHRITIS (*continued*).
5. Swelling typical, more or less fusiform, and with appearance of effusion.	5. Swelling as if solid enlargement of normal joint.
6. Deformity varying.	6. Greater tendency to fixation of joints in flexed position. Deformity in fingers is fixation in position of extreme flexion.
7. Anæmia early and constant symptom.	7. Anæmia, if present, a later symptom, and never so intense.
8. Many neurotic symptoms, especially early in the disease: sweating, headache, tingling, numbness, pigmentation of skin, etc.	8. Wanting; no headache, etc.
9. Very rarely have subacute attacks.	9. Greater tendency to subacute attacks.

RHEUMATOID ARTHRITIS (*continued*).	RHEUMATIC ARTHRITIS (*continued*).
10. Heart normal but rapid in action.	10. Heart often diseased.
11. Hard rapid pulse.	11. Pulse varies according to state of heart.
12. Reflexes normal or subnormal.	12. Reflexes increased, especially later in the disease.
13. Muscular atrophy concurrent with, and often previous to, joint affection, and small muscles chiefly.	13. Muscular atrophy subsequent to joints being affected ; often large muscles first.
14. Any age.	14. Adults and mostly over middle age.

LONDON :
PARDON AND SONS, PRINTERS,
WINE OFFICE COURT, FLEET STREET, E.C.